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- (71) Applicant (*for all designated States except US*):
MEISHAR H.Z. YAZAMUT LTD. [IL/IL]; 41 Meishar,
76 850 D.N. Emek Soreq (IL).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): **SMILANSKY, Zeev**
[IL/IL]; 41 Meishar, 76 850 D.N. Emek Soreq (IL).
- (74) Agent: **G. E. EHRLICH (1995) LTD.**; 11 Menachem Be-
gin Street, 52521 Ramat Gan (IL).
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(54) Title: **PROTEIN SYNTHESIS MONITORING (PSM)**

(57) Abstract: A method and a device are disclosed for monitoring the synthesis of proteins by the ribosome in real time, in-vivo as well as in in-vitro. The ribosome is engineered to carry a donor fluorophore, and tRNA and/or amino acids and/or some other part of the ribosome are either engineered to carry acceptor fluorophores or else their natural fluorescent properties are utilized as acceptors. As the ribosome mechanism processed the mRNA and tRNA molecules and synthesizes a polypeptide chain, a light source illuminates the ribosome, exciting the donor fluorophores and thereby the acceptor fluorophores whenever these are in sufficient proximity to a donor. The resulting data can be tabulated to interpret activity of candidate drugs, elucidate cellular proteomic mechanisms, allow controlled production of proteins, and in general provide a novel, important piece of information central to the solution of the cellular puzzle.



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